



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,216	09/11/2003	Sanjay George Mathias	130128	7700

7590 02/21/2007
John S. Beulick
Armstrong Teasdale LLP
Suite 2600
One Metropolitan Square
St. Louis, MO 63102

EXAMINER

KISH, JAMES M

ART UNIT	PAPER NUMBER
----------	--------------

3737

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/660,216

Applicant(s)

MATHIAS ET AL.

Examiner

James Kish

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/1/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6,8-10,12-15,17,19,20 and 22-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 1,2,4-6,8-10,12-15,17,19,20 and 22-24 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed November 1, 2006 have been fully considered but they are not persuasive.

1. Applicant has essentially added the limitations of dependent claims 3 and 7 to independent claim 1, added the limitations of dependent claims 9 and 11 to independent claim 8, added the limitations of dependent claims 14 and 16 to independent claim 12, added the limitations of dependent claims 18, 19 and 21 to independent claim 17, and added the limitations of dependent claims 23 and 25 to independent claim 22. Claims 9, 14 and 21 remain pending. Claims 3, 7, 11, 16, 18, 19, 23 and 25 have been cancelled.
2. The 102(b) rejections based on prior art reference Miyazaki (US Patent NO. 6,144,201) have been withdrawn and therefore Applicant's arguments regarding this reference are moot.
3. Applicant's arguments that Gober and Manning do not teach the currently amended claims is respectfully disagreed by the Examiner. Gober discloses a system and method for filtering an ECG signal from a patient placed within an MR apparatus. Figures 4a-b demonstrate the filtering provided. The filters themselves remove unwanted noise while also providing time delays. Gober also states that the final output of the filtered ECG measurement contains a time delay of about +/- 10 ms (column 4, lines 42-68). Manning provides a method to compare an ECG with a PPU signal. A

Art Unit: 3737

verification step provides information as to whether an acquired image should be discarded and retaken.

4. In response to Applicant's argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. In *re McLaughlin*, 443 F.2d 1392; 170 USPQ 209 (CCPA 1971).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 4-6, 8-10, 12-15, 17, 19-20, 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gober (US Patent No. 5,052,398) in view of Manning et al. (US Patent No. 6,501,979). Gober discloses a QRS filter for real time heart imaging with ECG monitoring in the magnetic field of an NMR imaging system. A filter according to the present invention comprises a low pass filter for attenuating those portions of the QRS signal applied as an input above a given frequency. The low pass

Art Unit: 3737

filter imposes a first given phase shift on the output signal relative to the input signal. This is then fed through a high pass filter that applies another phase shift (column 2, lines 6-28). Also see column 4, lines 42-68 for descriptions of Figure 4a. However, Gober does not discuss rejecting or accepting the ECG signals. Manning discloses a method and apparatus for gated imaging of a patient by combining information from an electrocardiogram (ECG) and a peripheral pulse signal (PPU). The PPU signal is defined as any representation of the pulsatile flow of blood in an artery (column 3, lines 10-15). The MR apparatus comprises an ECG unit for obtaining ECG signals from the patient in the examination zone, PPU unit for obtaining ECG signals present in the patient in the examination zone, and a synchronization unit which receives the ECG and PPU signals and generates synchronization signals for the MR apparatus by combining information from both the received ECG and the received PPU signals (column 7, lines 11-20). The PPU and the ECG are combined as described in the passage starting at column 3, line 59 and ending at column 4, line 22. The system is described at column 4, lines 48-61 and comprises a radio frequency coil assembly, as well as structures inherent to MRI systems. The system also creates positive and negative verification signals to indicate whether an acquired image should be discarded and retaken (column 11, lines 49-59). See all of column 13 for a description of the preferred embodiment, also illustrated in Figure 5. One embodiment includes a computer readable media carrying encoded program instructions for causing a medical imaging apparatus to perform the claimed invention (column 5, lines 53-55). As defined, the PPU described by Manning is any representation of the pulsatile flow of blood in an artery. ECG

Art Unit: 3737

measurements include the T-wave, which represents recovery of the ventricles.

Therefore, an ECG is not taught away from for use as a PPU measurement device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the verification methods of Manning into the system of Gober because filtering and signal processing of ECG data can be complicated and unreliable, and as a result erroneous triggering of imaging data acquisition may still occur even though the ECG signals have been filtered and processed. Therefore, the verification unit could correlate graphs (a) and (b) of Figures 4a and 4b to verify that the R-waves have the same approximate information.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 3737

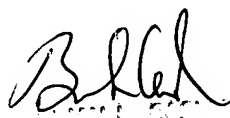
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Kish whose telephone number is 571-272-5554. The examiner can normally be reached on 8:30 - 5:00 ~ Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMK


JAMES KISH
EXAMINER
ELECTRONIC BUSINESS CENTER